NPI OPEN SYSTEMS STATUS

Office of Science and Technology

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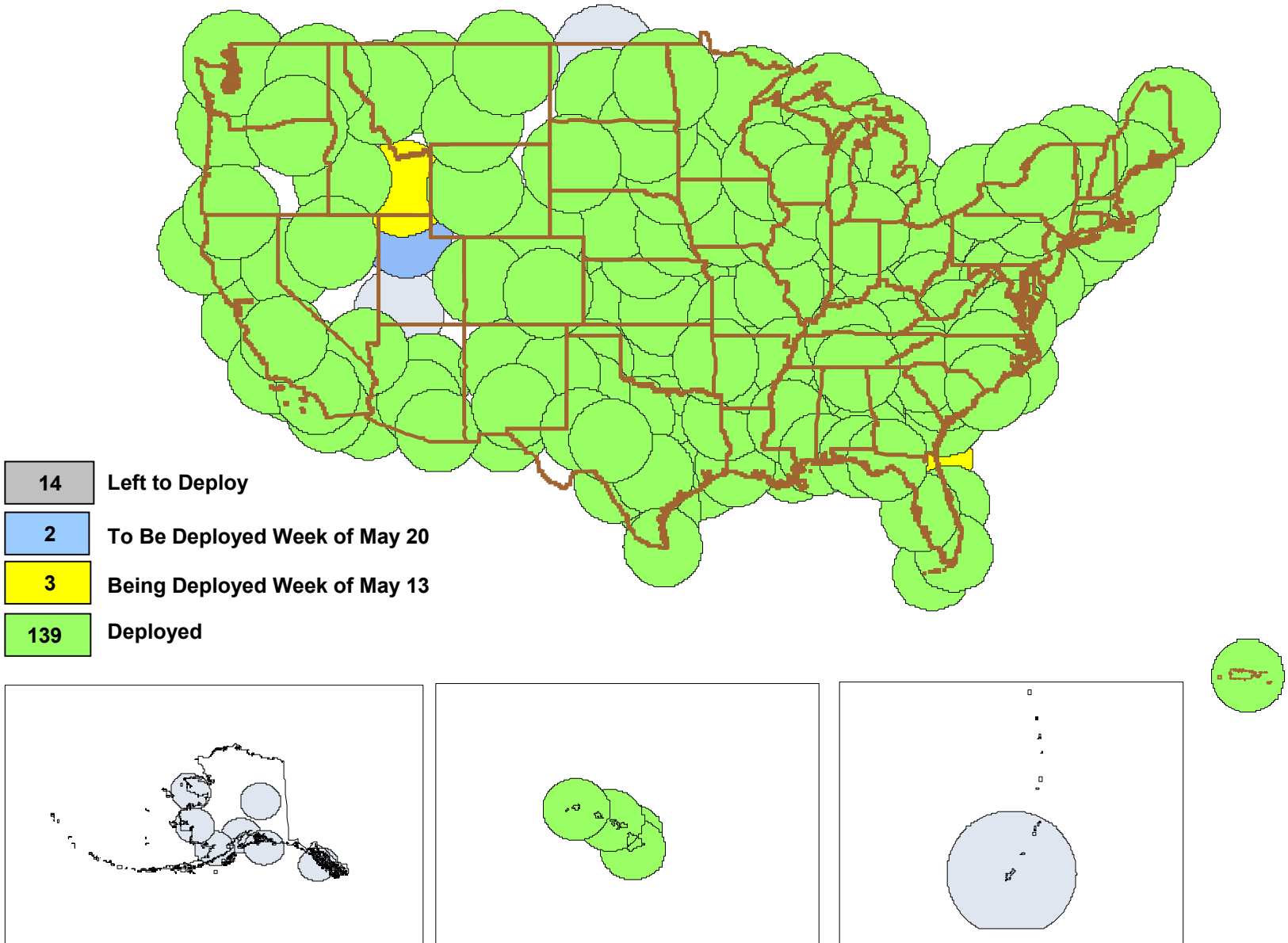
May 21, 2002

OPEN RPG

- Deployment completion scheduled for end of July 2002
- No major issues
- As of 5/17/02, 151 sites installed
- FAA Alaska and DOD Pacific rim are next areas of concentration

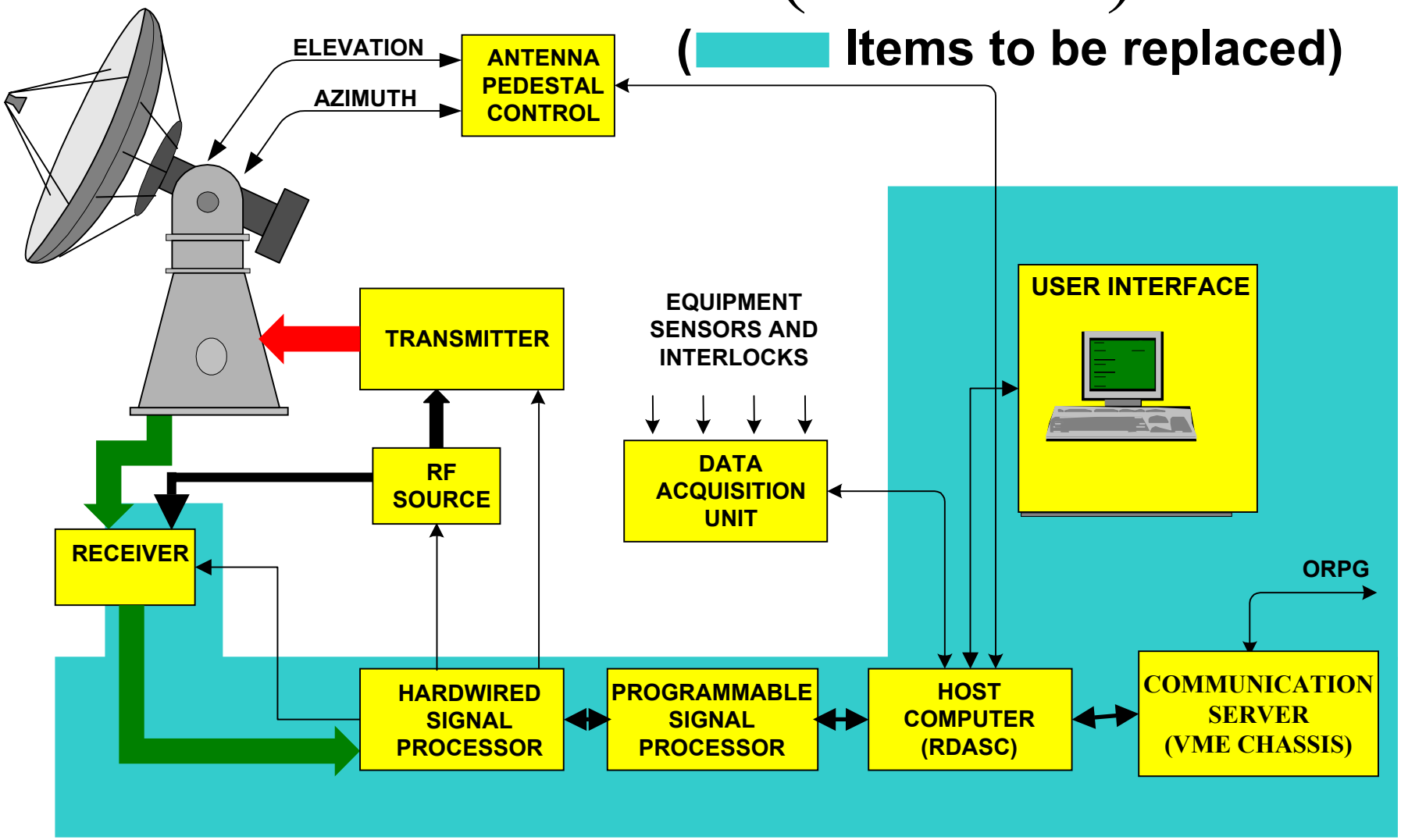
ORPG Deployment Through May 17, 2002



Recent ORDA Activities

- Detailed Baseline Analysis
- ORDA Technical Alternatives Study

Current RDA (nominal)



Updated Baseline Schedule

- ORDA Schedule and WBS
  - Completed for POC to support alternatives Analysis
  - Presented to NPI Management and several stakeholders
  - Schedule calls for May 15, 2005 start of deployment

Methodology

- OS&T requested that the ROC examine a number of alternative technical approaches for viability and potential advantages; results briefed at February PMC.
- Recommended in-depth analysis of 2 approaches to compare to the current POC approach; PMC approved.
- RSIS tasked to gather detailed cost and technical information; results presented to Government on March 26, 2002.
- Government team, led by the SEC, reviewed technical alternatives.
- Cost analysis of each approach performed by OS&T PPD

Decision Process

- ORDA Decision Briefing Schedule
  - April 26 - NEXRAD Program Manager and NPI Manager (John McNulty and Jack Hayes)
  - May 2 - Briefed NWS Director (General Kelly)_
  - May 15 – Brief NEXRAD PMC Members
- Decision

Tornado Warning Improvement Strategies
NWS GPRA Recommendations Team

- **Increase data density, both spatially and temporally**
- **Improve data assimilation and analysis**
- **Implement storm scale models**

ORDA Impact on Tornado Warnings

Increased Spatial/Temporal Density of WSR-88D Data

- **Increase data angular resolution to 0.5^{o} from 1^{o}, increase reflectivity radial resolution to 0.25 km from 1 km**
  - **Doubles range for detecting small tornadoes, 240 km vs 120 km**
  - **Increases areal coverage for detecting small tornadoes by 80%**
  - **Increases identification of small scale features for all tornadoes**
- **Recover velocity data for storms currently obscured by range folding**
- **Complete volume scanning in 2.5 min versus current 5 min**

<u>Projected Impact</u>

- **Increase positive lead time tornado detection accuracy to 75% from current 50%**
- **Increase average lead time to 14 min from current 11 min**

From Hayes/McCarthy Briefing to
NWS Corporate Board dated 3/20/02

ORDA Impact on Tornado Warnings Through Increasing Spatial and Temporal Density of WSR-88D Data

Engineering Change	System Impact	Operational Impact
Change Data Sampling Interval to 0.5° From 1.0°	Doubling of Areal Resolution of Reflectivity and Velocity Data	Better Detection of Small Tornadoes By 50%, Particularly For Tornadoes In The 120 km to 240 km Range
Signal Processing Techniques To Mitigate Range And Velocity Folding	Additional, Better Quality Velocity Data for Storms Currently Obscured By Overlaid Echoes	Better Detection of Small Tornadoes Through Improved Analysis of Storm Circulation Patterns
Increase Radial Resolution Of Reflectivity Data To 1/4 km From 1 km	Quadrupling of Areal Resolution Of Reflectivity Data	Better Detection of Small Tornadoes Through Improved Analysis Of Storm Structure
Transmitter and Signal Processing Techniques To Double Scanning Speed	Volume Coverage Updates In Half The Current Time, 2.5 min versus 5 min	Increased Tornado Warning Lead Time Through More Timely Provision of Base Data, Mesocyclone And TVS Data to Forecasters

Cumulative Projected Impact on Tornado Warnings

Increase in tornado detection accuracy, with positive lead times, to 75% of tornadoes from current 50%

Increase in average lead time for tornado warnings to 14 min from current 11 min

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